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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,216

04/10/2006

Hidekazu Nishiuchi

NNA-110-B

6925

48980 7590 06/10/2010  
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TROY, MI 48084

EXAMINER

BITAR, NANCY

ART UNIT

PAPER NUMBER

2624

NOTIFICATION DATE

DELIVERY MODE

06/10/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@youngbasile.com  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/575,216	<b>Applicant(s)</b> NISHIUCHI, HIDEKAZU	
	<b>Examiner</b> NANCY BITAR	<b>Art Unit</b> 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments, in the amendment filed 3/2/2010, with respect to the rejections of claims 1-19 under 35 U.S.C. 103(a) have been fully considered but are moot in view of the new ground(s) of rejection necessitated by the amendments. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Watanabe et al ( US 7,620,237)

**Examiner Notes**

2. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary

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skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-19 rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaoka et al (JP 2002-005656)) and Watanabe et al ( US 7,620,237)

5.

6. As to claim 1, 7 and 14; Nagaoka teaches detecting the position of an object in one or more images captured by an image pickup device mounted on a vehicle, comprising:

(a) a memory configured to store a plurality of images captured by the image pickup device, including a first image of an object taken at a first time when the vehicle is balanced and a second image of the object captured at a second time (figure 3 is a flow chart which shows the procedure of the position detection process of the subject in the image processing unit 2, and this processing is performed for every predetermined time. The A/D conversion of the output signal of the cameras 1R and 1L is carried out first, and it stores in an image memory (Step S11, S12, S13). The picture stored in an image memory is a gray scale picture included brightness information, paragraph [0016]; note that Thus, the position coordinate (area center of gravity) of each recognized subject is stored in a memory as time series position data, and is used for next data processing, paragraph [0025]); and (b) a controller operatively coupled to the memory and configured to determine from the first image taken at the first time the position of the object and a first pitch angle of the vehicle relative to a q-coordinate in a horizontal direction is zero and to determine from the second image whether a second pitch angle of the vehicle relative to the y-coordinate in the horizontal direction at the second time is zero and to determine the position of the object on the second image based on the position of the object in the first image if the first pitch angle is zero and the second pitch angle is not zero (figure 7C and 8 and figure 4 , and in Step S41, while computing the vehicles

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movement magnitude D by carrying out time quadrate of the vehicle speed VCAR, from carrying out time quadrate of the yaw rate YR, compute yaw angle (swinging angle) theta of the vehicles 10, a stillness subject is made to correspond to position data, and it memorizes. In Step S42, the position data of a camera coordinate system is computed about a stillness subject. A possibility of being detected during vehicle running uses a "stillness subject" as a subject stationary highly and certainly, for example like a signal or a telegraph pole, and it is judged by the existence of the feature of such a subject here. Specifically, what fulfills the following conditions is judged to be a "stillness subject." paragraph [0044]). Note that the image processing unit 2 constitutes a position sensing device from this embodiment, and it more specifically, Step S23 of drawing 3 and Step S42 of drawing 4 are equivalent to the 1st position data calculating means, Step S45 and Step S46 of drawing 4 are equivalent to an approximation-straight-lines calculating means and a pan angle calculating means, respectively, Step S24 of drawing 3 is equivalent to the 2nd position data calculating means, and Step S44 of drawing 4 is equivalent to a turning travel compensation means, paragraph [0055]). While Nagoaka meets a number of the limitations of the claimed invention, as pointed out more fully above, Nagaoka fails to specifically teach the controller operatively coupled to the memory and that the pitch angles of the vehicle in reference to the y-coordinate in a horizontal direction is being zero. Specifically, Watanabe teaches provide a position detecting apparatus and a method of correcting data in the position detecting apparatus, which is capable of obtaining a corrective value for correcting an error due to the relative pan angle between optical axes of plural imaging units highly accurately and correcting the position in an actual space of the object with the corrective value, without any adjustment apparatus for adjusting the optical axes (see abstract). Watanabe clearly teaches in figure 2 calculating respective mounting angles (a pan

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angle and a pitch angle) of the infrared cameras 16R, 16L, a camera image clipping coordinate calculating unit 86 for calculating clipping coordinates used as a reference for clipping processed ranges from images, and a parallax offset value calculating unit 88 for calculating a parallax offset value as an error which is contained in the parallax between object images because the optical axes of the infrared cameras 16R, 16L are not parallel to each other. Watanabe teaches in figure 10 and 11, The calculation of the parallax offset value (a parallax corrective value) in step S22 will be obtained when one object is imaged by the infrared cameras 16R, 16L, supposing that the optical axes of the infrared cameras 16R, 16L are parallel to each other and a relative pan angle  $\theta$  between the infrared cameras 16R, 16L is zero (0). The parallax offset value is an error which is obtained for the parallax  $d_n$  when a relative pan angle  $\theta$  is not zero. It would have been obvious to one of ordinary skill in the art to use the controlling of the pitch angle of Watanabe et al in Nagoaka in order to be capable of obtaining a corrective value for correcting an error due to the relative pan angle between optical axes of plural imaging units highly accurately and correcting the position in an actual space of the object with the corrective value, without any adjustment apparatus for adjusting the optical axes. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 2, 8, and 15 Nagaoka teaches the controller is further configured to compute an image acceleration of the second image; and to determine that the second image was captured when the second pitch angle of the vehicle was zero if the image acceleration of the second image is zero ( Step S41, while computing the vehicles movement magnitude  $D$  by carrying out time quadrate of the vehicle speed  $V_{CAR}$ , from carrying out time quadrate of the yaw rate  $YR$ , compute

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yaw angle (swinging angle)  $\theta_r$  of the vehicles 10, a stillness subject is made to correspond to position data, and it memorizes, figure 4).

The limitation of claim 13 has been addressed above.

As to claim 3,9,16; Nagaoka teaches the controller is further configured to compute the vertical image velocity of each of plurality of images, and to determine that the second image was captured when pitch angle of the vehicle was zero if an image has a zero image acceleration and a non-zero vertical image velocity (That is, if it explains taking the case of a case where the vehicles 10 performed a turning travel of point PA to yaw angle  $\theta_r$ , and reach the point PB, in order to remove influence of a turning travel, it is necessary to change coordinates of the stillness subject OBJS actually observed by position PA into coordinates observed with position PC. Position PC is an intersection with straight-line LH vertical to the straight line LPD through the straight line LPD which shows the present vehicle traveling direction, and position PA. The figure (b) shows a stillness object image on a picture acquired with the camera 1R, and shows a position of an object image when OBJSA, OBJSB, and OBJSC observe in the positions PA, PB, and PC, respectively. The coordinates QOBJA in a camera coordinate system when the stillness subject OBJS is observed in position PA are set to  $(X1c, Y1c, Z1c)$  here, If the coordinates QOBJC which can set a camera coordinate system when the stillness subject OBJS is observed in position PC are set to  $(X1Rc, Y1Rc, Z1Rc)$ , a relation with the coordinates QOBJA and QOBJC, paragraph [0041-0048]; see also equation 7).

As to claim 4, 10, and 17; Nagaoka teaches the memory includes a third image of the object captured at a third time when a third pitch angle the vehicle is zero, and wherein the controller is further configured to determine the position of the object in the second image based on the position

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of the object in the first image and the position in the third image (paragraph [0047-0048; figures 15-16).

As to claim 5, 11, and 18, Nagaoka teaches the controller is further configured to compute a size of the object in the second image based on a size of the object in the first image if the second image was captured when second pitch angle of the vehicle was not zero, and to compute a distance between the image pickup device and the object in the second image based on the computed sizes of the objects the first and second images ( size of the object , paragraph [0024] and [0045-0046]; figure 15-16).

As to claim 6, 12, and 19, Nagaoka teaches the controller is further configured to compute the vision axis of the image pickup device based on the computed distance if the second image was captured when the second pitch angle of the vehicle was not zero, and to compute the position of the object in the second image based on the computed vision axis (The approximation straight lines which the position data of the time series of a stillness subject is computed, and approximate the relative-displacement locus of a stillness subject based on the position data of the this computed time series are computed, and the pan angle of the optic axis of an imaging means is computed based on the approximation straight lines. And the position data of the subject in a real space coordinate system is computed by amending the position data of the subject in an imaging means coordinate system according to a pan angle. Therefore, the pan angle which shows a gap of the transverse direction of the optic axis of an imaging means can be computed simply and correctly based on the picture acquired by an imaging means, and an exact detecting position can be performed and the position data computed by the 1st position data calculating means is amended using the parameter about the turning travel of vehicles and approximation straight lines are



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computed based on the position data after this amendment, Even when vehicles circle during pan angle calculation processing, an exact pan angle can be computed, paragraph [0055-0056]).

### **Conclusion**

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nancy Bitar/  
Examiner, Art Unit 2624

/Wes Tucker/  
Primary Examiner, Art Unit 2624